International Application No PCT/ 03/00468

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B01D17/022 B01J B01J20/26 B01J20/28 B01D17/04 B01D17/00 B01D17/12 B01D17/025 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) B01D B01J Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Category * Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X GB 2 083 370 A (MARUCHI KOKEN KK) 1-4,6-9, 24 March 1982 (1982-03-24) 21-24,26 Y page 2; claim 11; figures 3,9,11,12 11-20, 37-46 page 4 - page 5 X US 4 220 544 A (MCGREW JAY L) 47-56 2 September 1980 (1980-09-02) the whole document 11-20. 37-46 X US 4 497 707 A (ANDERSON JOSEPH W) 47-49. 5 February 1985 (1985-02-05) 51,55,56 the whole document A US 4 591 441 A (SAKAI UTARO) 1-56 27 May 1986 (1986-05-27) figures 3,5 X Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but chad to understand the principle or theory underlying the hypertics. "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone filling date "L" document which may throw doubts on priority ctain(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person sidiled to the set. "O" document referring to an oral disclosure, use, exhibition or document published prior to the international filling date but later than the priority date claimed *&* document member of the same patent family Date of the actual completion of the international search Date of mailing of the International search report 10 December 2003 17/12/2003 Name and mailing address of the ISA Authorized officer European Paleni Office, P.B. 5818 Patentham 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 91 651 epo ni,

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International Application No PCT/ 03/00468

| C.(Continua | tion) DOCUMENTS CONSIDERED TO BE RELEVANT | · · · · · · · · · · · · · · · · · · · | | |
|-------------|---|---------------------------------------|--|--|
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Fielevant to claim No. | | |
| A | US 3 558 482 A (YOUNG CHARLES E DE) 26 January 1971 (1971-01-26) figure 4 | 21-36 | | |
| A | US 3 847 821 A (KRUEGER D) 12 November 1974 (1974-11-12) the whole document | 1~56 | | |
| Α | WO 02/20115 A (EARTH CANADA CORP; BENACHENOU AMINE (CA); PARENT JEAN PIERRE (CA)) 14 March 2002 (2002-03-14) cited in the application page 12 | 11-20, 37-56 | | |
| A | GB 1 418 806 A (CONTINENTAL OIL CO) 24 December 1975 (1975-12-24) the whole document | 50,52 | | |
| A | US 6 015 502 A (DZHRAGATSPANVAN MISAK ET AL) 18 January 2000 (2000-01-18) cited in the application the whole document | 1 | | |
| | | | | |
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| • | | 1. | | |

ation on patent family members

International Application No PCT/03/00468

| | | | | | 101/0 | 03/00408 |
|----|---|----|---|----------|-------------------------|--------------------------|
| | atent document d in search report | | Publication date | | Patent family member(s) | Publication date |
| GB | 2083370 | A. | 24-03-1982 | JP | 1404906 C | 09-10-1987 |
| | . * | | | JP | 57136910 A | 24-08-1982 |
| | | | | ĴΡ | 62009362 B | 27-02-1987 |
| | • | | | JP | 57144008 A | 06-09-1982 |
| | | | | JP | 57147407 A | 11-09-1982 |
| | | | • | JP | 57030508 A | 18-02-1982 |
| | | | | AU | 550131 B2 | 06-03-1986 |
| | • | | | AU | 7147881 A | 08-07-1982 |
| | • | | | CA | 1178542 A1 | 27-11-1984 |
| | | | | FR | 2487690 A1 | 05~02-1982 |
| | | | • | KR | 8500904 B1 | 27-06-1985 |
| | A2205 A4 | | 00 00 1000 | | | 27 00-1985 |
| | 4220544 | A | 02-09-1980 | NONE | | - |
| US | 4497707 . | Α | 05-02-1985 | CA | 1225601 A1 | 18-08-1987 |
| | | | | DE | 3467302 D1 | 17-12-1987 |
| | | | | EΡ | 0122692 A1 | 24-10-1984 |
| | | | | ES | 8507009 A1 | 01-12-1985 |
| | | • | | ES | 8603277 A1 | 16-04-1986 |
| | | | | JP | 59179117 A | 11-10-1984 |
| | | | | NO | 840910 A | 24-09-1984 |
| US | 4591441 | A | 27-05-1986 | JP | 1234561 · C | 17-10-1984 |
| | | | | JP | 56084603 A | 10-07-1981 |
| | | | | JP | 59009203 B | 01-03-1984 |
| | | | · · · | DE | 3046278 A1 | 27-08-1981 |
| US | 3558482 | А | 26-01-1971 | NONE | | |
| US | 3847821 | Α | 12-11-1974 | AU | 473302 B2 | 17-06-1976 |
| | | | | AU | 7448974 A | 29-04-1976 |
| | | | | CA | 1059921 A1 | 07-08-1979 |
| | | | | DE | 2450103 A1 | 24-04-1975 |
| | | | | FR | 2248068 A1 | 16-05-1975 |
| | | | | GB | 1488854 A | 12-10-1977 |
| | | | | IT | 1021860 B | 20-02-1978 |
| | | | | JP | 861775 .C | 30-05-1977 |
| | | | • | JP | 50073266 A | 17-06-1975 |
| | | | · . | JP | 51038944 B | 25-10-1976 |
| | • | | | NL | 7413277 A | 22-04-1975 |
| | | | | SE | 417280 B | 09-03-1981 |
| | • | | | SE | 7412670 A | 21-04-1975 |
| | و مي دي داد داد داد داد داد داد داد داد داد | | | US. | 3951814 A | 20-04-1976 |
| WO | 0220115 | Α | 14-03-2002 | AU | 9154801 A | 22-03-2002 |
| | | • | • | WO | 0220115 A2 | 14-03-2002 |
| | | • | | CA | 2421076 A1 | 14-03-2002 |
| | | | | EP | 1322393 A2 | 02-07-2003 |
| | | | · ———————————————————————————————————— | NO | 20031041 A | 06-05-2003 |
| GB | 1418806 | A | 24-12-1975 | BE | 794932 A1 | 29-05-1973 |
| | | | | CA | 1002886 A1 | 04-01-1977 |
| | | | | DE . | 2303633 A1 ~ | 27-09-1973 |
| | | | | ES | 412327 A1 | 01-01-1976 |
| | | | | FR | 2176682 A1 | 02-11-1973 |
| | | | | ΙT | 977940 B | 20-09-1974 |
| | | | | | | |
| | | | • | JP NL | 49005865 A 7300721 A | 19-01-1974 19-09-1973 |

tion on patent family members

PCT/ 03/00468

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|---|---|---------------------|-------------------------|---------------|------------------|
| GB 1418806 | Α | | US | 3779908 A | 18-12-1973 |
| US 6015502 | A | . 18-01-2000 | AU | 718018 B2 | 06-04-2000 |
| | | • | AU | 3998197 A | 23-04-1998 |
| | ٠ | | US | 2002006643 A1 | 17-01-2002 |